

Applicable Guidelines, Standards, and Regulations

THE Savannah River Site (SRS) environmental monitoring program is designed to meet state and federal regulatory requirements for radiological and nonradiological programs. These requirements are stated in U.S. Department of Energy (DOE) Order 5400.1, “General Environmental Protection Program,” and DOE Order 5400.5, “Radiation Protection of the Public and the Environment”; in the Clean Air Act [Standards of Performance for New Stationary Sources, also referred to as New Source Performance Standards (NSPS), and the National Emission Standards for Hazardous Air Pollutants (NESHAP)]; in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA—also known as the Superfund); in the Resource Conservation and Recovery Act (RCRA); in the Clean Water Act (i.e., National Pollutant Discharge Elimination System—NPDES); and in the National Environmental Policy Act (NEPA). Compliance with environmental requirements is assessed by DOE—Savannah River (DOE—SR), the South Carolina Department of Health and Environmental Control (SCDHEC), and the U.S. Environmental Protection Agency (EPA).

The SRS environmental monitoring program’s objectives incorporate recommendations of

- the International Commission on Radiological Protection (ICRP) in *Principles of Monitoring*

for the Radiation Protection of the Population, ICRP Publication 43

- DOE orders 5400.1 and 5400.5
- DOE/EH-0173T, “Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance”

Detailed information about the site’s environmental monitoring program is documented in section 1111 (SRS EM Program) of the *SRS Environmental Monitoring Section Plans and Procedures*, WSRC-3Q1-2, Volume 1. This document is reviewed annually and updated every 3 years.

SRS has implemented and adheres to the SRS Environmental Management System Policy. Implementation of a formal Environmental Management System (EMS), such as that described in the International Organization for Standardization (ISO) 14001 standard, is an Executive Order 13148 (“Greening the Government Through Leadership in Environmental Management”) requirement. SRS maintains an EMS that fully meets the requirements of ISO 14001. The full text of the policy is included in this appendix, beginning on page 76.

Drinking water standards (DWS) can be found at <http://www.epa.gov/safewater/mcl.html> on the Internet, and maximum allowable concentrations of toxic air pollutants can be found at <http://www.scdhec.net/baq>. More information about certain media is presented in this appendix.

Air Effluent Discharges

DOE Order 5400.5 establishes Derived Concentration Guides (DCGs) for radionuclides in air. DCGs, calculated by DOE using methodologies consistent with recommendations found in International Commission on Radiological Protection (ICRP) publications 26 (*Recommendations of the International Commission on Radiological Protection*) and 30 (*Limits for the Intake of Radionuclides by Workers*), are used as reference concentrations for conducting environmental protection programs at DOE sites. DCGs are not considered release limits. DCGs for

radionuclides in air are discussed in more detail on page 72.

Radiological airborne releases also are subject to EPA regulations cited in 40 CFR 61, “National Emission Standards for Hazardous Air Pollutants,” Subpart H (“National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities”).

Regulation of radioactive and nonradioactive air emissions—both criteria pollutants and toxic air pollutants—has been delegated to SCDHEC.

SCDHEC, therefore, must ensure that its air pollution regulations are at least as stringent as federal regulations required by the Clean Air Act. This is accomplished by SCDHEC Regulation 61–62, “Air Pollution Control Regulations and Standards.” As with many regulations found in the Code of Federal Regulations (CFR), many of SCDHEC’s regulations and standards are source specific. Each source of air pollution at SRS is permitted or exempted by SCDHEC, with specific emission rate limitations or special conditions identified. The bases for the limitations and conditions are the applicable South Carolina air pollution control regulations and standards. In some cases, specific applicable CFRs are also cited in the permits issued by SCDHEC. The applicable SCDHEC regulations are too numerous to discuss here, so only the most significant are listed.

Two SCDHEC standards, which govern criteria and toxic air pollutants and ambient air quality, are applicable to all SRS sources. Regulation 61–62.5, Standard No. 2, “Ambient Air Quality Standards,” identifies eight criteria air pollutants commonly used as indices of air quality (e.g., sulfur dioxide, nitrogen dioxide, and lead) and provides allowable site boundary concentrations for each pollutant as well as the measuring intervals. Compliance with the various pollutant standards is determined by conducting air dispersion modeling for all sources of each pollutant using EPA-approved dispersion models and then comparing the results to the standard. The pollutants, measuring intervals, and allowable concentrations are given in table A–1. The standards are in micrograms per cubic meter unless noted otherwise.

Two-hundred fifty-six toxic air pollutants and their respective allowable site boundary concentrations are identified in Regulation 61–62.5, Standard No. 8, “Toxic Air Pollutants.” As with Standard No. 2, compliance is determined by air dispersion modeling. Toxic air pollutants can be found at <http://www.scdhec.net/baq>.

SCDHEC airborne emission standards for each SRS permitted source may differ, based on size and type of facility, type and amount of expected emissions, and the year the facility was placed into operation. For example, SRS powerhouse coal-fired boilers are regulated by Regulation 61–62.5, Standard No. 1, “Emissions From Fuel Burning Operations.” This standard specifies that for powerhouse stacks built before February 11, 1971, the opacity standard is 40 percent. For new sources constructed after this

Table A–1
Criteria Air Pollutants

Pollutant	Interval	µg/m ³ ^{a,b}
Sulfur Dioxide	3 hours	1300 ^c
	24 hours	365 ^c
	annual	80
Total Suspended Particulates	Annual Geometric Mean	75
PM10	24 hours	150 ^d
	annual	50 ^d
Carbon Monoxide	1 hour	40 mg/m ³
	8 hours	10 mg/m ³
Ozone	1 hour	0.12 ppm ^{d,e}
Gaseous Fluorides (as HF)	12-hour avg.	3.7
	24-hour avg.	2.9
	1-week avg.	1.6
Nitrogen Dioxide	annual	100
Lead	Calendar Quarterly Mean	1.5

a Arithmetic average except in case of total suspended particulate matter (TSP)

b At 25 °C and 760 mm Hg

c Not to be exceeded more than once a year

d Attainment determinations will be made based on the criteria contained in appendices H and K, 40 CFR 50, July 1, 1987.

e New ozone standard promulgated in CFR but not yet incorporated into SC State Implementation Plan and regulations. Standard based on 8-hour average of 0.080 ppm, with nonattainment designation based on fourth exceedance.

date, the opacity standard typically is 20 percent. The standards for particulate and sulfur dioxide emissions are shown in table A–2.

Regulation 61–62.5, Standard No. 4, “Emissions from Process Industries,” is applicable to all SRS sources except those regulated by a different source specific standard. For some SRS sources, particulate matter emission limits are dependent on the weight of the material being processed and are determined from a table in the regulation. For process and diesel engine stacks in existence on or before December 31, 1985, emissions shall not exhibit an opacity greater than 40 percent. For new sources, where construction was started after

December 31, 1985, the opacity standard is 20 percent.

As previously mentioned, some SRS sources have both SCDHEC and CFRs applicable and identified in their permits. For the package steam generating boilers in K-Area and two portable package boilers, both SCDHEC and federal regulations are applicable. The standard for sulfur dioxide emissions is specified in 40 CFR 60, Subpart Dc, “Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units,” while the standard for particulate matter is found in Regulation 61–62.5, Standard No. 1, “Emissions From Fuel Burning Operations.” Because these units were constructed after applicability dates found in both regulations, the opacity limit for these units is the same in both regulations. The emissions standards for these boilers are presented in table A–3.

Table A–2
Airborne Emission Standards for SRS
Coal-Fired Boilers

Sulfur Dioxide	3.6 lb/10 ⁶ BTU ^a
Total Suspended Particulates BTU	0.6 b/10 ⁶
Opacity	40%

a British Thermal Unit

Table A–3
Airborne Emission Standards for SRS Fuel
Oil-Fired Package Boilers

Sulfur Dioxide	0.5 lb/10 ⁶ BTU
Total Suspended Particulates	0.6 b/10 ⁶ BTU
Opacity	20%

Another federal regulation, 40 CFR 60, Subpart Kb, “Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984,” specifies types of emission controls that must be incorporated into the construction of a source. In this regulation, the type of control device required is dependent on the size of the tank and the vapor pressures of the material being stored. This regulation is applicable to several sources at SRS, such as the two 30,000-gallon No. 2 fuel oil storage tanks in K-Area or the four mixed solvent storage tanks in H-Area. However, because of the size of these tanks and vapor pressures of the materials being stored, these tanks are not required to have control devices installed. The only requirements applicable to SRS storage tanks are those for record keeping.

(Process) Liquid Effluent Discharges

DOE Order 5400.5 establishes DCGs for radionuclides in process effluents. (DCGs for radionuclides in water are discussed in more detail on page 73.) DCGs were calculated by DOE using methodologies consistent with recommendations found in ICRP, 1987 and ICRP, 1979 and are used

- as reference concentrations for conducting environmental protection programs at DOE sites
- as screening values for considering best available technology for treatment of liquid effluents

DOE Order 5400.5 exempts aqueous tritium releases from best available technology requirements but not from ALARA (as low as reasonably achievable) considerations.

Three NPDES permits are in place that allow SRS to discharge water into site streams and the Savannah River: one industrial wastewater permit (SC0000175) and two stormwater runoff permits (SCR000000 for industrial discharges and SCR100000 for construction discharges).

A fourth permit (ND0072125) is a no-discharge water pollution control land application permit that regulates sludge generated at onsite sanitary waste treatment plants.

Detailed requirements for each permitted discharge point—including parameters sampled for, permit limits for each parameter, sampling frequency, and method for collecting each sample—can be found in the individual permits, which are available to the public through SCDHEC’s Freedom of Information Office at (803) 734–5376.

Table A–4
South Carolina Water Quality Standards for Freshwaters

Note: This is a partial list only of water quality standards for freshwaters.

Parameters	Standards
a. Fecal coliform	Not to exceed a geometric mean of 200/100 mL, based on five consecutive samples during any 30-day period; nor shall more than 10 percent of the total samples during any 30-day period exceed 400/100 mL.
b. pH	Range between 6.0 and 8.5.
c. Temperature	Generally, shall not be increased more than 5 °F (2.8 °C) above natural temperature conditions or be permitted to exceed a maximum of 90 °F (32.2 °C) as a result of the discharge of heated liquids. For exceptions, see E–9.A, Regulation 61–68, “Water Classifications and Standards” (June 26, 1998).
d. Dissolved oxygen	Daily average not less than 5.0 mg/L, with a low of 4.0 mg/L.
e. Garbage, cinders, ashes, sludge, or other refuse	None allowed.
f. Treated wastes, toxic wastes, deleterious substances, colored or other wastes, except those in (e) above.	None alone or in combination with other substances or wastes in sufficient amounts to make the waters unsafe or unsuitable for primary-contact recreation or to impair the waters for any other best usage as determined for the specific waters assigned to this class.
g. Ammonia, chlorine, and toxic pollutants listed in the federal Clean Water Act (307) and for which EPA has developed national criteria (to protect aquatic life).	See E–10 (list of water quality standards based on organoleptic data) and E–12 (water quality criteria for protection of human health), Regulation 61–68, “Water Classifications and Standards” (June 26, 1998).

SOURCE: [SCDHEC, 1998]

Site Streams

SRS streams are classified as “Freshwaters” by the South Carolina Pollution Control Act. Freshwaters are defined as surface water suitable for

- primary- and secondary-contact recreation and as a drinking water source after conventional treatment in accordance with SCDHEC requirements
- fishing and survival and propagation of a

balanced indigenous aquatic community of fauna and flora

- industrial and agricultural uses

Table A–4 provides some of the specific guides used in water quality surveillance, but because some of these guides are not quantifiable, they are not tracked in response form (i.e., amount of garbage found).

Savannah River

Because the Savannah River is defined under the South Carolina Pollution Control Act as a

Freshwater system, the river is regulated in the same manner as are site streams (table A–4).

Drinking Water

The federal Safe Drinking Water Act (SDWA)—enacted in 1974 to protect public drinking water supplies—was amended in 1980, 1986, and 1996.

SRS drinking water systems are tested routinely by SRS and SCDHEC to ensure compliance with SCDHEC State Primary Drinking Water Regulations, R61–58, and EPA National Primary Drinking Water Regulations, 40 CFR 141.

SRS drinking water is supplied by 18 separate systems, all of which utilize groundwater sources. The three larger consolidated systems (A-Area, D-Area, and K-Area) are actively regulated by SCDHEC and are classified as nontransient/noncommunity systems because each serves more than 25 people. The remaining 15 site water systems, each of which serves fewer than 25 people, receive a lesser degree of regulatory oversight.

Under the SCDHEC-approved, ultra-reduced monitoring plan, lead and copper sampling will not be required again for the A-Area consolidated system until 2004. The D-Area and K-Area consolidated water systems qualified in 1997 for an ultra-reduced monitoring plan. Both D-Area and K-Area will be sampled in 2003 for lead and copper.

The B-Area Bottled Water Facility, which was approved for operation in 1998, is listed as a public water system by SCDHEC and is required to be sampled for bacteriological analysis on a quarterly basis. Unlike the D-Area and K-Area consolidated water systems, lead and copper monitoring are not required.

DWS for specific radionuclides and contaminants can be found on the Internet at <http://http://www.epa.gov/safewater/mcl.html>.

Groundwater

Groundwater is a valuable resource and is the subject of both protection and cleanup programs at SRS. More than 1,000 wells are monitored each year at the site for a wide range of constituents. Monitoring in the groundwater protection program is performed to detect new or unknown contamination across the site, and monitoring in the groundwater cleanup program is performed to meet the requirements of state and federal laws and regulations. Most of the monitoring in the cleanup program is governed by SCDHEC's administration of RCRA regulations.

The analytical results of samples taken from SRS monitoring wells are compared to various standards. The most common are final federal primary DWS—or other standards if DWS do not exist. The DWS are considered first because groundwater aquifers are defined as potential drinking water sources by the South Carolina Pollution Control Act. DWS can be found at <http://www.epa.gov/safewater/mcl.html> on the Internet. Other standards sometimes are applied by regulatory agencies to the SRS waste units under their jurisdiction. For example, standards under RCRA can include DWS, groundwater protection standards, background levels, or alternate concentration limits.

SRS responses to groundwater analytical results require careful evaluation of the data and relevant standards. Results from two constituents having

DWS—dichloromethane and bis(2-ethylhexyl) phthalate—are evaluated more closely than other constituents and are commonly dismissed. Both are common laboratory contaminants and are reported in groundwater samples with little or no reproducibility. Both are reported, with appropriate flags and qualifiers, in detailed groundwater monitoring results that can be obtained by contacting the manager of the Westinghouse Savannah River Company (WSRC) Environmental Monitoring and Analysis group at 803–952–6931. Also, the standard used for lead, 50 µg/L, is the SCDHEC DWS. The federal standard of 15 µg/L is a treatment standard for drinking water at the consumer's tap.

The regulatory standards for radionuclide discharges from industrial and governmental facilities are set under the Clean Water Act and Nuclear Regulatory Commission and DOE regulations. In addition, radionuclide cleanup levels are included in the site RCRA permit under the authority of the South Carolina Pollution Control Act. The proposed drinking water maximum contaminant levels discussed in this report are only an adjunct to these release restrictions and are not used to regulate SRS groundwater.

Many potential radionuclide contaminants are beta emitters. The standard used for gross beta is a screening standard; when public drinking water exceeds this standard, the supplier is expected to analyze for individual beta and gamma emitters. A

gross beta result above the standard is an indication that one or more radioisotopes are present in quantities that would exceed the EPA annual dose equivalent for persons consuming 2 liters daily. Thus, for the individual beta and gamma radioisotopes (other than strontium-90 and tritium), the standard considered is the activity per liter that would, if only that isotope were present, exceed the dose equivalent. Similarly, the standards for alpha emitters are calculated to present the same risk at the same rate of ingestion.

The element radium has several isotopes of concern in groundwater monitoring. Although radium has a DWS of 5 pCi/L for the sum of radium-226 and radium-228, the isotopes have to be measured separately, and the combined numbers may not be representative of the total. Radium-226, an alpha emitter, and radium-228, a beta emitter, cannot be analyzed by a single method. Analyses for total alpha-emitting radium, which consists of radium-223, radium-224, and radium-226, are compared to the standard for radium-226.

Potential Dose

The radiation protection standards followed by SRS are outlined in DOE Order 5400.5 and include EPA regulations on the potential doses from airborne releases and treated drinking water.

The following radiation dose standards for protection of the public in the SRS vicinity are specified in DOE Order 5400.5.

Drinking Water Pathway	4 mrem per year
Airborne Pathway	10 mrem per year
All Pathways	100 mrem per year

The EPA annual dose standard of 10 mrem (0.1 mSv) for the atmospheric pathway, which is contained in 40 CFR 61, Subpart H, is adopted in DOE Order 5400.5.

These dose standards are based on recommendations of the ICRP and the National Council on Radiation Protection and Measurements (NCRP).

The DOE dose standard enforced at SRS for drinking water is consistent with the criteria contained in “National Interim Primary Drinking Water Regulations, 40 CFR Part 141.” Under these

Four other constituents without DWS are commonly used as indicators of potential contamination in wells. These constituents are

- specific conductance at values equal to or greater than 100 $\mu\text{S}/\text{cm}$
- alkalinity (as CaCO_3) at values equal to or greater than 100 mg/L
- total dissolved solids (TDS) at values equal to or greater than 200 mg/L
- pH at values equal to or less than 4.0 or equal to or greater than 8.5.

The selection of these values as standards for comparison is somewhat arbitrary; however, these values exceed levels usually found in background wells at SRS. The occurrence of elevated alkalinity (as CaCO_3), specific conductance, pH, and TDS within a single well may also indicate leaching of the grouting material used in well construction, rather than degradation of the groundwater.

regulations, persons consuming drinking water shall not receive an annual whole body dose—DOE Order 5400.5 interprets this dose as committed effective dose equivalent —of more than 4 mrem (0.04 mSv).

In 2000, EPA promulgated 40 CFR, Parts 9, 141, and 142, “National Primary Drinking Water Regulations; Radionuclides; Final Rule.” This rule, which is applicable only to community drinking water systems, finalized maximum contaminant levels (MCLs) for radionuclides, including uranium. In essence, it reestablishes the MCLs from EPA’s original 1976 rule. Most of these MCLs are derived from dose conversion factors that are based on early ICRP-2 methods.

However, when calculating dose, SRS must use the more current ICRP-30-based dose conversion factors provided by DOE. Because they are based on different methods, most EPA and DOE radionuclide dose conversion factors differ. Therefore, a direct comparison of the drinking water doses calculated for showing compliance with DOE Order 5400.5 to the EPA drinking water MCLs cannot be made.

Comparison of Average Concentrations in Airborne Emissions to DOE Derived Concentration Guides

Average concentrations of radionuclides in airborne emissions are calculated by dividing the yearly release total of each radionuclide from each stack by

the yearly stack flow quantities. These average concentrations then can be compared to the DOE

DCGs, which are found in DOE Order 5400.5 for each radionuclide.

DCGs are used as reference concentrations for conducting environmental protection programs at all DOE sites. DCGs, which are based on a 100-mrem exposure, are applicable at the point of discharge (prior to dilution or dispersion) under conditions of continuous exposure (assumed to be an average inhalation rate of 8,400 cubic meters per year). This means that the DOE DCGs are based on the highly

conservative assumption that a member of the public has direct access to and continuously breathes (or is immersed in) the actual air effluent 24 hours a day, 365 days a year. However, because of the large distance between most SRS operating facilities and the site boundary, this scenario is improbable.

Average annual radionuclide concentrations in SRS air effluent can be referenced to DOE DCGs as a screening method to determine if existing effluent treatment systems are proper and effective.

Comparison of Average Concentrations in Liquid Releases to DOE Derived Concentration Guides

In addition to dose standards, DOE Order 5400.5 imposes other control considerations on liquid releases. These considerations are applicable to direct discharges but not to seepage basin and Solid Waste Disposal Facility (SWDF) migration discharges. The DOE order lists DCG values for most radionuclides. DCGs are used as reference concentrations for conducting environmental protection programs at all DOE sites. These DCG values are not release limits but screening values for best available technology investigations and for determining whether existing effluent treatment systems are proper and effective.

Per DOE Order 5400.5, exceedance of the DCGs at any discharge point may require an investigation of best available technology waste treatment for the liquid effluents. Tritium in liquid effluents is specifically excluded from best available technology requirements; however, it is not excluded from other ALARA considerations. DOE DCG compliance is demonstrated when the sum of the fractional DCG

values for all radionuclides detectable in the effluent is less than 1.00, based on consecutive 12-month average concentrations.

DCGs, based on a 100-mrem exposure, are applicable at the point of discharge from the effluent conduit to the environment (prior to dilution or dispersion). They are based on the highly conservative assumption that a member of the public has continuous direct access to the actual liquid effluents and consumes 2 liters of the effluents every day, 365 days a year. Because of security controls and the large distance between most SRS operating facilities and the site boundary, this scenario is highly improbable, if not impossible.

For each SRS facility that releases radioactivity, the site's Environmental Monitoring and Analysis group (EMA, formerly the Environmental Monitoring Section) compares the monthly liquid effluent concentrations and 12-month average concentrations against the DOE DCGs.

Environmental Management

SRS began its cleanup program in 1981. Two major federal statutes provide guidance for the site's environmental restoration and waste management activities—RCRA and CERCLA. RCRA addresses the management of hazardous waste and requires that permits be obtained for facilities that treat, store, or dispose of hazardous or mixed waste. It also requires that DOE facilities perform appropriate corrective action to address contaminants in the environment. CERCLA (also known as Superfund) addresses the uncontrolled release of hazardous substances and the cleanup of inactive waste sites. This act establishes a National Priority List of sites targeted for assessment and, if necessary, corrective/remedial action. SRS was placed on this list December 21, 1989 [Fact Sheet, 2000]. In August 1993, SRS entered into the Federal Facility Agreement (FFA) with EPA Region IV and

SCDHEC. This agreement governs the corrective/remedial action process from site investigation through site remediation. It also describes procedures for setting annual work priorities, including schedules and deadlines, for that process [FFA under section 120 of CERCLA and sections 3008(h) and 6001 of RCRA].

Additionally, DOE is complying with Federal Facility Compliance Act requirements for mixed waste management—including high-level waste, most transuranic waste, and low-level waste with hazardous constituents. This act requires that DOE develop and submit site treatment plans to the EPA or state regulators for approval.

The disposition of facilities after they are declared excess to the government's mission is managed by the Facilities Disposition Division. The facility

disposition process is conducted in accordance with DOE Order 430.1A, "Life Cycle Asset Management," and its associated guidance documents. The major emphases are (1) to reduce the risks to workers, the public, and the

environment, and (2) to reduce the costs required to maintain the facilities in a safe condition through a comprehensive surveillance and maintenance program.

Quality Assurance/Quality Control

DOE Order 414.1, "Quality Assurance," sets requirements and guidelines for departmental quality assurance (QA) practices. To ensure compliance with regulations and to provide overall quality requirements for site programs, WSRC developed its *Quality Assurance Management Plan, Rev. 8* (WSRC-RP-92-225). The requirements of WSRC-RP-92-225 are implemented by the *Westinghouse Savannah River Company Quality Assurance Manual* (WSRC 1Q).

The *Savannah River Site Environmental Monitoring Section Quality Assurance Plan*, WSRC-3Q1-2, Volume 3, Section 8000), was written to apply the QA requirements of WSRC 1Q to the environmental monitoring and surveillance program. The EMA WSRC-3Q1 procedure series includes procedures on sampling, radiochemistry, and water quality that emphasize the quality control requirements for EMA.

QA requirements for monitoring radiological air emissions are specified in 40 CFR 61, "National Emission Standards for Hazardous Air Pollutants." For radiological air emissions at SRS, the responsibilities and lines of communication are detailed in *National Emission Standards for Hazardous Air Pollutants Quality Assurance Project Plan (U)* (WSRC-IM-91-60).

Reporting

DOE Orders 231.1, "Environment, Safety and Health Reporting," and 5400.5, "Radiation Protection of the Public and Environment," require that SRS submit an annual environmental report.

This report, the *Savannah River Site Environmental*

To ensure valid and defensible monitoring data, the records and data generated by the monitoring program are maintained according to the requirements of DOE Guide 1324.5B, "Implementation Guide for Use with 36 CFR Chapter XII – Subchapter B Records Management," and of WSRC 1Q. QA records include sampling and analytical procedure manuals, logbooks, chain-of-custody forms, calibration and training records, analytical notebooks, control charts, validated laboratory data, and environmental reports. These records are maintained and stored per the requirements of *WSRC Sitewide Records Inventory and Disposition Schedule* (WSRC-1M-93-0060).

EMA assessments are implemented according to the following documents:

- DOE Order 414.1, "Quality Assurance"
- DOE/EH-0173T
- DOE Environmental Management Consolidated Audit Program
- WSRC 1Q
- WSRC 12Q, *Assessment Manual*

Figure A-1 illustrates the hierarchy of relevant guidance documents that support the EMA QA/QC program.

Report for 2002, is an overview of effluent monitoring and environmental surveillance activities conducted on and in the vicinity of SRS from January 1 through December 31, 2002.

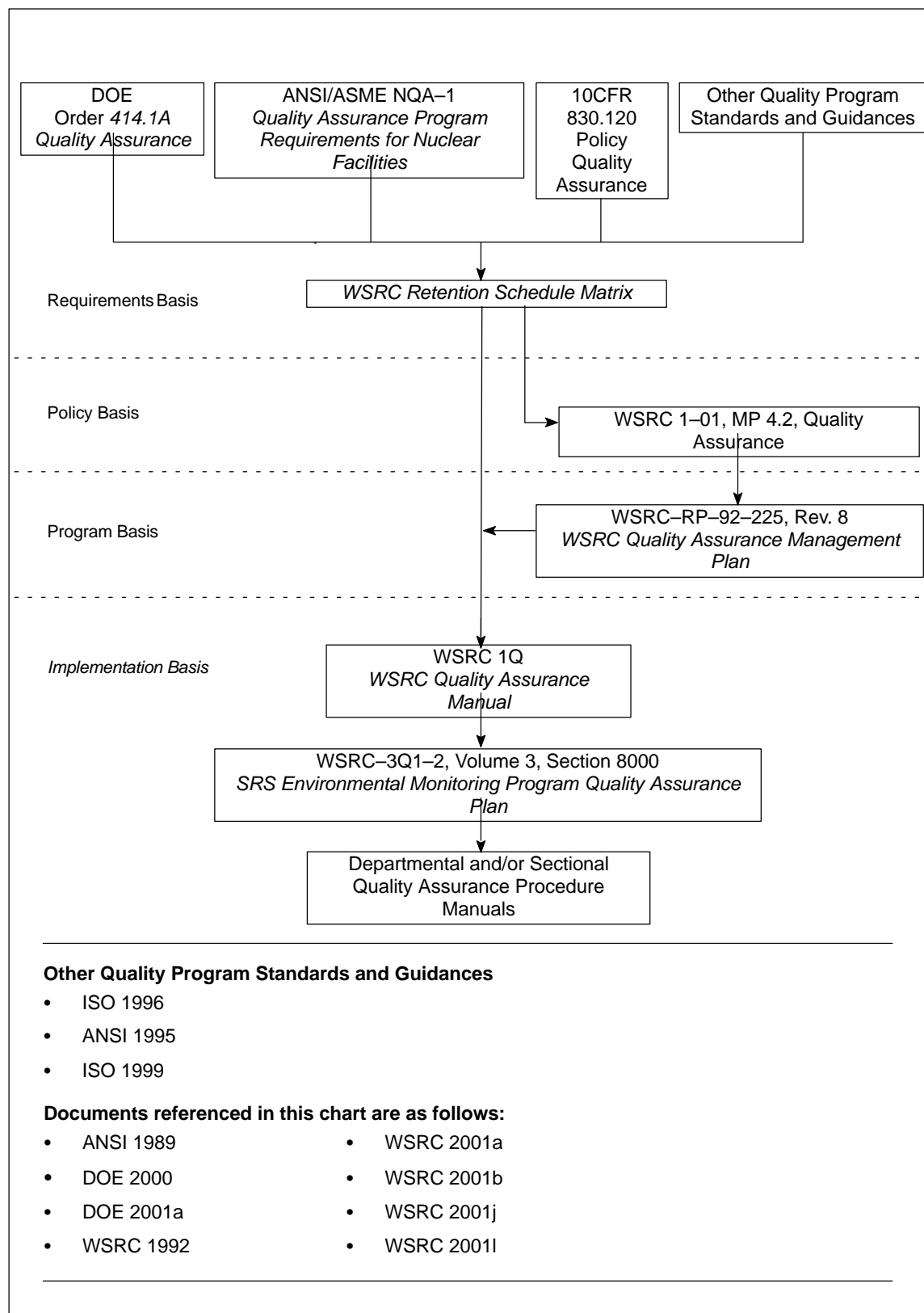


Figure A-1 SRS EM Program QA/QC Document Hierarchy

This diagram depicts the hierarchy of relevant guidance and supporting documents for the QA/QC program.

ISO 14001 Environmental Management System

ISO 14001 is the EMS standard within the ISO 14000 series of standards, a family of voluntary environmental management standards and guidelines. SRS first achieved ISO 14001 independent certification of its EMS against this standard in 1997 by demonstrating adherence to and programmatic implementation of the SRS Environmental Management System Policy.

Beginning in May 2002, the site discontinued independent certification of its EMS program, but it continues to self-evaluate itself against the ISO 14001 standard. A requirement of the standard is maintenance of an environmental policy. The full text of the policy (without the names of the signatories) follows.

Savannah River Site (SRS) Environmental Management System Policy May 1, 2002

OBJECTIVE

This document describes the SRS Environmental Management System Policy, which is a system ordered by the President to be implemented throughout all Federal Agencies. The objective of this policy is to ensure that all employees performing work at the Savannah River Site (SRS) do so in accordance with all applicable federal, state, and local requirements, Executive Order 13148, the guidance of ISO 14001, and the environmental goals and objectives of the Savannah River Site Strategic Plan.

DIRECTIVE

Recognizing that many aspects of operations carried out at the SRS may impact the environment, the SRS policy is that all employees, contractors, subcontractors, and other entities performing work at the SRS shall abide by the directives in this document. Westinghouse Savannah River Company (WSRC), Wackenhut Services, Inc.–Savannah River Site (WSI–SRS), Savannah River Ecology Laboratory (SREL), General Services Administration–Savannah River Site (GSA), National Nuclear Security Administration–Savannah River Site (NNSA–SRS), and U.S. Department of Agriculture Forest Service–Savannah River (USFS–SR) endorse the principles stated in this policy.

- This document serves as the primary documentation for the environmental goals and objectives of the SRS and shall be available to the public. It shall be centrally maintained and updated as necessary to reflect the changing needs, missions, and goals of the SRS.
- The Environmental Management System pursues and measure continual improvement in performance by establishing and maintaining documented environmental objectives and targets that correspond to SRS's mission, vision, and core values. The environmental objectives and targets shall be established for each relevant function and level within DOE–SR, NNSA–SRS, and all contractors, subcontractors, and other entities performing work at the SRS for all activities having actual or potentially significant environmental impacts.
- DOE–SR, NNSA–SRS, and all contractors, subcontractors, and other entities performing work at SRS shall:
 - 1 Manage the SRS environment, natural resources, products, waste, and contaminated materials so as to eliminate or mitigate any threat to human health or the environment at the earliest opportunity and implement process improvements as appropriate to ensure continued improvement of performance in environmental management.
 - 2 Implement a pollution prevention program to reduce waste generation, releases of pollutants, future waste management/pollution control costs; and to minimize environmental impacts as well as promote increased energy efficiency.
 - 3 Conduct operations in compliance with all applicable federal, state, and local laws, regulations, statutes, executive orders, directives and standards/requirements identification documents.
 - 4 Work cooperatively and openly with appropriate local, state, federal agencies, public stakeholders, and site employees to prevent pollution, achieve environmental compliance, conduct cleanup/restoration activities, enhance environmental quality, and ensure the protection of workers and the public.

- 5 Design, develop, construct, operate, maintain, decommission and deactivate facilities and operations in a manner that shall be resource efficient and will protect and improve the quality of the environment for future generations and continue to maintain the SRS as a unique national environmental asset.
- 6 Recognize that the responsibility for quality communications rests with each individual employee and that it shall be the responsibility of all employees to identify and communicate ideas for improving environmental protection activities and programs at the site.

Adherence to and programmatic implementation of this policy shall be monitored by the DOE–SR, NNSA–SRS–DP, and NNSA–SRS–DNN Managers in coordination with the contractors, subcontractors, and other entities performing work on the SRS. *[Editors’ note: The names of the signatories that appeared at the end of the full text of the policy have not been included here.]*